TDCP (Tris (1,3-dichloro-2-propyl) phosphate)

TCEP (Tris (2-chloroethyl) phosphate)

New legislation is needed to rapidly reduce exposure to toxic chemicals, such as the flame retardants TDCP and TCEP, which are found in a wide variety of household products -- including strollers, nursing pillows, and couches and chairs -- and are suspected to cause cancer, and neurological and reproductive harm

TDCP and TCEP are two chemicals added to a wide range of commonly used consumer products to inhibit the ignition or spread of fire. Unfortunately, both toxic chemicals have potential unwanted health effects that outweigh their utility as flame retardants. Not only have these toxic substances been detected in scientific studies surveying contamination of indoor house dust and drinking water sources, but they have also been shown in laboratory animal studies to cause tumors. Despite widespread exposure and probable cancer-causing effects of TDCP and TCEP, existing TSCA rules severely limit the EPA’s authority to regulate exposure to these harmful flame retardants.

**To make safer:** Finally, safer alternatives to chlorinated and brominated flame retardants that still meet applicable flammability standards have been identified.

**Products where TDCP is found**

TDCP has been the main fire retardant used in automotive foam cushioning for many years and is frequently used in upholstered furniture foam. Although banned from children’s pajamas in 1977, TDCP continues to be in widespread use in baby nursery items, strollers, nursing pillows, and other children’s products at concentrations of up to 5 percent (by weight), as well as other foam padded furniture, such as couches, chairs, and sofa beds. Between 10 and 50 million pounds of TDCP were imported or produced in the United States in 2006 and demand is anticipated to increase.

Dust is known to be a major source of exposure to many flame retardants and young children have been found to be among the most highly exposed. Traces of TDCP have been detected in sewage effluent, river water, seawater, drinking water, sediment, and in fish throughout the world. In laboratory animal studies, TDCP has been associated with cancer of the liver, kidney, brain and testis. It has also been found to cause other harmful effects in the liver, kidney, bone marrow, and testis.

**Products where TCEP is found**

More than 500,000 pounds of TCEP are imported or produced in the United States per year for use in furniture foam, vinyl (PVC), electronics, such as televisions and computers, adhesives, non-apparel textiles, upholstery, the back-coating of carpets, rubber, plastics, paints, and varnishes.

TCEP has also been detected in indoor air samples and dust. Dust is known to be a major source of exposure to many flame retardants and young children have been found to be among the most highly exposed. TCEP has been shown in laboratory animal studies to cause tumors in the kidney and thyroid glands. In other laboratory animal studies, TCEP has been shown to cause reductions in fertility and poor sperm quality and interferes with brain signaling, causing hyperactivity.

TCEP is no longer produced in Europe, yet its production and use in the United States remains legal and unrestricted.

TCEP has been identified by Canada as posing a risk to human health and is under consideration for a ban in all products and materials.

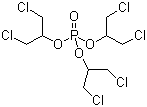
California’s EPA’s Proposition 65 lists TCEP as a cancercausing agent, based on studies done by the National Institutes of Health’s National Toxicology Program.

* TDCP is the main flame retardant used in automotive foam cushioning and the second most widely used flame retardant in furniture foam.
* TDCP was used in children’s sleepwear until being banned in 1977 – however, it’s still used in other baby gear including strollers, nursing pillows and rocking chair foam.
* TCEP is also used in furniture foam as well as PVC vinyl, home electronics (including televisions and computers), adhesives, upholstery, carpet backings, rubber, plastics, paints and varnishes.
* Both chemicals contaminate household dust and drinking water. One study in the Boston, MA area detected TDCP in more than 96 percent of the samples collected.
* In a 2002 study of water samples from 139 streams across the country, TCEP was one of the most frequently detected contaminants.

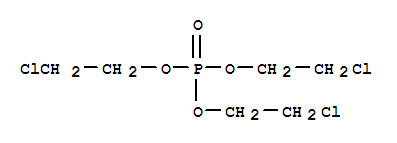
**Stay Safe**

Fire safety starts with good fire prevention practices, not toxic chemicals. Sprinklers, smoke detectors and strongly enforced building codes are all proven to reduce fire-related deaths. A strong first line of defense can help avoid the unnecessary use of harmful chemicals.

* Replace furniture with ripped or torn upholstery that exposes the foam interior.
* Avoid furniture that says it meets the CA flame retardant standard TB 117. This is an antiquated standard that requires excessive amounts of flame retardant chemicals to be added to furniture foam.
* Buy furniture and textiles made from natural fibers like wool, jute or cotton – these material are more naturally flame-retardant that synthetic fibers and require fewer chemical additives to meet flammability standards.
* Household dust can contain high levels of flame retardant chemicals. Mop your floors, dust frequently with a damp cloth, and use a vacuum cleaner with a HEPA filter.
* Before buying electronics, check with the manufacturer to see if they have pledged to phase out the use of chlorinated flame retardants.
* **Molecular Structure: TDCP**

[](http://img.guidechem.com/casimg/13674-87-8.gif)

|  |  |
| --- | --- |
|  | C9H15Cl6O4P |

* **Molecular Structure:** TCEP
* [](http://www.lookchem.com/300w/2010/0617/115-96-8.jpg)

C6H12Cl3O4P

**How to avoid**

*1.* There’s no sure-fire way to avoid unsafe flame retardants until Congress passes the [Safe Chemicals Act](http://www.saferchemicals.org/safe-chemicals-act/index.html), legislation that will require chemical manufacturers to demonstrate that their products are safe *before* they end up in our furniture, computers, and bodies.

**Until then...**

*2.* Make sure your living quarters are adequately protected with sprinklers, smoke detectors, and use common sense.

*3.* Replace furniture with ripped or torn upholstery that exposes the foam interior.

*4.* Avoid furniture that says it meets the CA flame retardant standard TB 117. This is an outdated standard that requires excessive amounts of flame retardant chemicals to be added to furniture foam.

*5.* Buy furniture and textiles made from natural fibers like wool, jute or cotton – these materials are more naturally flame-resistant than synthetic fibers and require fewer chemical additives to meet flammability standards.

*6.* To cut down on dust exposure to these chemicals: mop your floors, dust frequently with a damp cloth or microfiber cloth, and use a vacuum cleaner with a HEPA filter.

*7.* Before buying electronics, check with the manufacturer to see if they have pledged to phase out the use of [unsafe flame retardants](http://www.greenpeace.org/international/campaigns/toxics/electronics/how-the-companies-line-up/).

**Frequent hangouts**

Strollers, nursing pillows, couches, chairs, sofa beds, back-coating of carpets and upholstery, cell phones, TVs, computers and other electronics, and automobile cushioning.